

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

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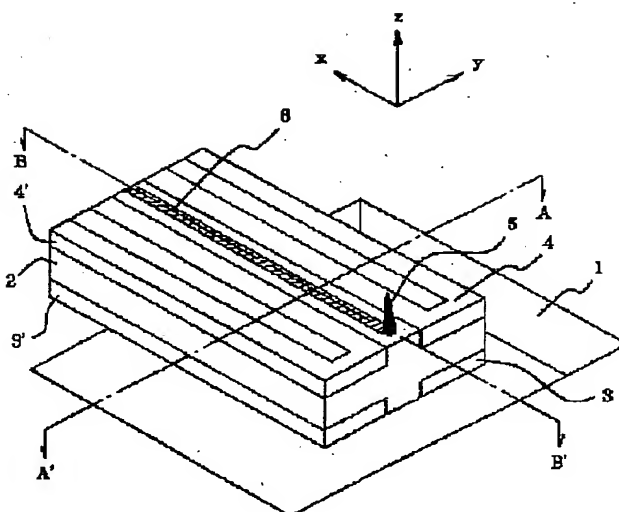
APPLICATION DATE : 31-03-92  
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APPLICANT : CANON INC;

INVENTOR : SHINJO KATSUHIKO;

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TITLE : CANTILEVER TYPE DISPLACEMENT  
ELEMENT, CANTILEVER TYPE PROBE  
USING THE SAME, SCAN TYPE  
TUNNEL MICROSCOPE USING THE  
SAME PROBE AND INFORMATION  
PROCESSOR



ABSTRACT : PURPOSE: To improve productivity, reproducibility of a cantilever type probe by forming a displacement element of one nonconductive element layer and a plurality of heat generator layers, and forming a cantilever type displacement element to be displaced by a thermal drive of the generator layer.

CONSTITUTION: A cantilever fixed at one end to an Si substrate 1 is formed of a support 2 made of non-doped polysilicon and heat generator layers 3, 3', 4, 4'. The generator layer is made of doped polysilicon with p-type or n-type conductivity. Further, a probe 5 for sensing a tunnel current and an electrode 6 for outputting its current are formed on the cantilever. Since the support 2 of the cantilever is partly expanded and contracted in an X-axis direction under the control of currents of the layers 3, 3', 4, 4', it can be driven in X-, Y- and Z-axes. It can be moved in the X-axis direction by supplying the same currents to the entire generator layers. It is moved in the Y-axis direction by supplying the currents only to the layers 3, 4. It can be driven in the Z-axis direction by supplying the currents only to the layers 3, 3'.

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